November, 1957

THE CHEMIST

VOLUME XXXIV NUMBER 11

Dr. Herman S. Bloch, F.A.I.C.

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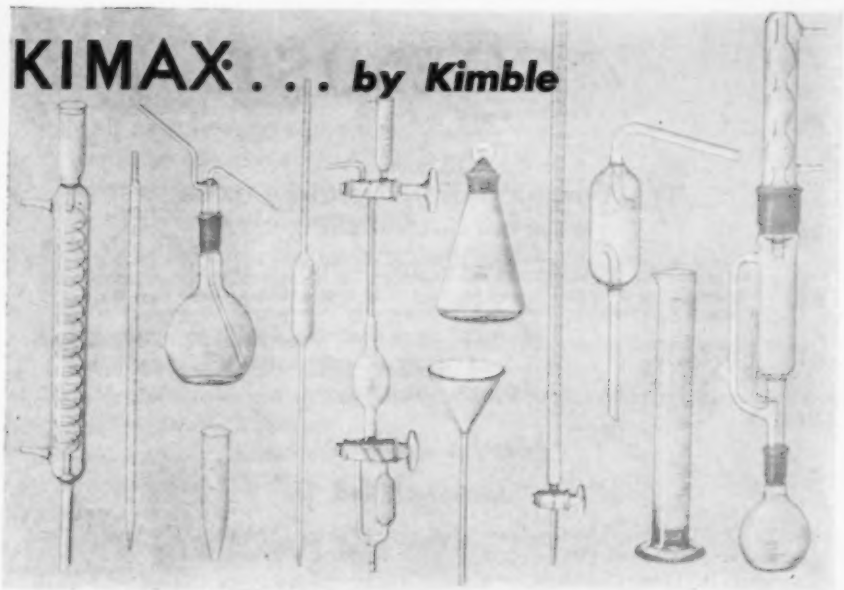

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D. H. Killeffer, 168 Westchester Ave., Tuckahoe 7, N. Y.

Dr. Frederick G. Sawyer, Vice President, Jacobs Engineering Co., 774 East Green St., Pasadena, Calif.

Florence E. Wall, Consultant, Writer, 210 East 68th Street, New York, N. Y.

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Deadlines for *The Chemist*

Copy for the January issue of The Chemist should be in our hands before December 10th. Advertising copy for January should be received not later than December 15th.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

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TO COME IN DECEMBER

The accent, appropriately enough in this festive month, will be on youth. The outstanding college seniors who received 1957 AIC Student Medals were eligible to compete in an essay contest. The prize paper will be published in this issue. Two addresses made at Student Medal presentation meetings are also here. They are "Technology or Tranquilizers," by C. D. Ender of Hercules Powder Co., Wilmington, Del., and "The Challenge Ahead," by Dr. P. Victor Peterson, president of Long Beach State College, Long Beach, Calif. Dr. John J. Bohrer, F.A.I.C., provides the guest editorial. • There will be a report on the presentation of the Niagara Chapter's Honor Scroll to Maurice C. Taylor, one of those heart-warming occasions when a founder member and faithful worker for the Chapter is honored by appreciative friends. • Part II of the serial, "Understanding the Creative Process", by Dr. M. J. Kelley, is also scheduled.

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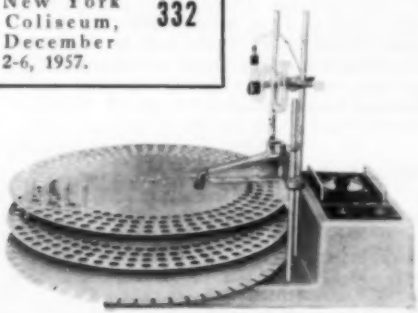

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EDITORIAL

Scientists and the Satellite

AT the American Museum-Hayden Planetarium Symposium on the International Geophysical Year, New York, September 12th, James Miles Chamberlain, coordinator, recalled "the prophetic paper of Sutton three years ago in which the remarkable advances of Russian rocketry were exposed to view, and the illuminating review by Gen. Walter Dornberger of German rocket research during World War II." He spoke of Dr. Fred Singer's paper on the "Mouse" satellite, which, he said, "marked the beginning of an information program that we trust shall culminate during the next several months in the launching of the first man-made moon."

Sixty-four nations and 8,000 scientists and engineers are participants in the IGY. Dr. Richard W. Porter, who heads the Technical Panel on the IGY Earth Satallite Program, pointed out that "the promise of great scientific return and the rapid development of research rocket techniques led to decisions by the U. S. and the U.S.S.R. to attempt to place research satellites into orbit during the IGY."

Three weeks later, the whole world was excited by the news that "Sputnik," the Russian satellite, was circling the earth. At once the public reacted with opinions about the effect of this great event on many phases of life. Astonishment and surprise pervaded many comments. Prominent persons rushed to scientists for orientation.

Now it was in March, 1955, that the IGY satellite program was adopted by the U.S., but apparently the public then thought nothing about its significance, should it succeed. Did they lack confidence in scientists? Or were they previously conditioned by the amused contempt that some newspapers gave, only a dozen years ago, to the German idea of a "space platform in the sky?"

The bewildered world may be less apathetic to scientists in the future, and it may even try to orient itself in advance to the implications of the results of scientific research. But the greatest of these implications was expressed by Dr. Joseph Kaplan, chairman of the U. S. National Committee, IGY, at the symposium:

"The fact that man can make a satellite and set it in an orbit about the earth is a monumental step forward in man's continuing search for knowledge of his physical environment. Perhaps even more auspicious is the fact that men are taking this historic step jointly under the aegis of the IGY, that unprecedented, cooperative exploration of our physical environment."

Special AIC Announcements

Honorary Memberships to Be Presented

Dr. W. E. Hanford, assistant to the president for research, Olin Mathieson Chemical Corporation, New York, N. Y., will receive Honorary AIC Membership at a dinner sponsored by the New York Chapter in New York, Dec. 12, 1957. Dr. Roger Adams will be honorary chairman.

Dr. Arnold O. Beckman, president of Beckman Instruments, Inc., Fullerton, California, will be presented with Honorary AIC Membership at a dinner sponsored by the Western Chapter, in Los Angeles, Calif., during the latter part of November.

New Secretary for New England Chapter

The New England AIC Chapter has appointed Dr. Albert E. Frost, Jr., of Dow Chemical Co., Eastern Research Laboratory, Framingham, Mass., as its new Secretary-Treasurer. He replaces Dr. George B. Walker, who has left New England to join Proctor and Gamble in Cincinnati, Ohio.

New Directory of Membership

A new directory of the membership of The American Institute of Chemists will be published early next spring. Cards requesting necessary information are being mailed out soon to members, who are requested to return these cards promptly. Non-members who wish to apply for membership are invited to send in their applications in November, if possible, so that they may be presented for Council action in ample time to assure their listing in the new Directory.

Will You Come

Nov. 5, 1957. New Jersey Chapter. Meeting to be held in conjunction with Rutgers University Student Affiliate Chapter of The American Chemical Society. Subject: "How to Get a Satisfactory Job." For information: Dr. W. R. Sullivan, Hoffman-La Roche, Inc., Nutley 10, N. J.

Nov. 7, 1957. New York Chapter. Dinner and meeting. Belmont Plaza Hotel, Baroque Room. Social hour 6 p.m. Dinner 7 p.m. ($6.50 for members, $7.00 for non-members). Meeting 8:00 p.m. Speaker, Dr. Ernest Hart, President, Food Machinery & Chemical Corp. For reservations: Lucky De Angelis, Foster D. Snell, Inc., 29 W. 15th St., New York, N. Y.

Nov. 12, 1957. Washington Chapter. Luncheon meeting, 12:15 P.M. O'Donnel's Sea Grill, 1223 E St., N.W., Washington, D. C. Speaker: Prof. Leo Schubert, chairman, Department of Chemistry, American University, "The American University—National Science Foundation High School Science Teacher Training Program."

Nov. 15, 1957. Twin City Chapter. Panel symposium: "Would You Advise Your Son to Be a Chemist?" Pro: Dr. Lloyd H. Reyerson, University of Minnesota. Con: Michael H. Baker, M. H. Baker Co. Group discussion. Cocktails, 6:00 p.m. Dinner 7:00 p.m. Meeting 8:00 p.m. Criterion Restaurant, St. Paul, Minn. For reservations, Morris Kenigsberg, The Toni Company, St. Paul, Minn.

Nov. 1957 (Latter part of month). Western Chapter. Los Angeles, Calif., presentation of Honorary AIC Membership to Dr. Arnold O. Beckman, President, Beckman Instruments, Inc., Fullerton, California. For information, Alfred J. Webber, 11703 Montana Ave., Los Angeles 49, Calif.

Dec. 3, 1957. Niagara Chapter. Meeting. Speaker, F. R. Sheldon, "Application of Statistical Analysis to Problems of Research, Production, and Management." Details to be announced.

Dec. 10, 1957. Washington Chapter. Program to be announced.

Dec. 12, 1957. New York Chapter. Dinner and meeting. Presentation of Honorary AIC Membership to Dr. W. E. Hanford, assistant to the president for research, Olin Mathieson Chemical Corp., New York 22, N. Y. Details to be announced.

Dec. 17, 1957. AIC National Council and Board of Directors Meeting, The Chemists' Club, 52 E. 41st St., New York 17, N. Y. Board meets at 5:30 p.m.; Council at 6:00 p.m.

Jan. 7, 1958. New Jersey Chapter. Subject, "Employer-Employee Relationships." Details to be announced.

Jan. 9, 1958. Pennsylvania Chapter. Dinner and Meeting, Penn Sherwood Hotel, Philadelphia, Pa. Award of Honor Scroll to Dr. Glenn E. Ullyot, F.A.I.C., of Smith, Kline and French. Dr. Richard T. Arnold of Alfred P. Sloan Foundation, will introduce Dr. Ullyot, who will speak on "Development and Requirements of Creativity." For information, Dr. T. M. Immediata, International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.

Feb. 4, 1958. Niagara Chapter meeting. Details to be announced.

Feb. 7, 1958. New York Chapter. Joint meeting with American Chemical Society. Details to be announced.

Feb. 18, 1958. AIC Board of Directors and National Council Meeting, The Chemists' Club, 52 E. 41st St., New York 17, N. Y. Board meets at 5:30 p.m.; Council at 6:00 p.m.

Mar. 6, 1958. Twin City Chapter will be host at a joint meeting with the American Chemical Society, American Institute of Chemical Engineers, and Industrial Chemists' Forum. Dr. Otto Eisenschiml, F.A.I.C., Scientific Oil Compounding Co., Chicago, Ill., will speak on "Present Day Problems of Our Profession." Details to be announced.

Mar. 11, 1958. New Jersey Chapter. Visit to Anheuser-Busch Brewery. Details to be announced.

Apr. 1, 1958. Niagara Chapter meeting. Details to be announced.

Apr. 3, 1958. New York Chapter. Young Chemists Meeting. Details to be announced.

April 10-11, 1958. Thirty-fifth Annual Meeting. THE AMERICAN INSTITUTE OF CHEMISTS. Ambassador Hotel, Los Angeles, California. Host: The Western Chapter.

May 13, 1958. New Jersey Chapter. Honor Scroll Meeting. Program to be announced.

June 3, 1958. Niagara Chapter Meeting. Details to be announced.

June 4, 1958. New York Chapter. Annual Dinner Meeting and Honor Scroll Award. Details to be announced.

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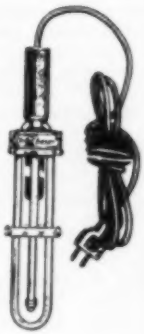

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The Captive Professional Chemist

Dr. Herman S. Bloch, F.A.I.C.
Universal Oil Products Company, Des Plaines, Illinois
(Presented when the author received the Honor Scroll of the Chicago AIC Chapter, October 10, 1957, at Chicago, Ill.)

WHEN I speak of "captive professional chemists", I use the term "captive", not in the sense of "caged" or "in bondage", but in the same sense that we refer to captive coal mines or captive chemicals when these products are used to supply a company's own needs, rather than for the open market. Similarly, the captive professional chemist is employed by a company which acquires his entire professional output for its own use. From data in a 1955 survey of the American Chemical Society, about 80-85 per cent of the chemists and chemical engineers in this country are captive; the remainder are consultants, members of educational institutions, or others free to engage in professional activities outside of their main employment.

Captive scientists stand at a crossroads. Our choice of direction will have a profound effect on the future lives of everyone. We may take a path which ultimately leads to full professional recognition, on a par with the classical professions; or we may, for temporary economic advantage and security, real or fancied, abandon our professional aspirations for the status of skilled scientific workers.

Since the development of large-scale chemical industry after World War I, and the training of large numbers of professional chemists who are the backbone of this industry, chemists have striven for the advancement of their professional standards and for general recognition as professional men—the type of social status enjoyed by the older professions, medicine, law, ministry, teaching. Unlike these, that of the chemist has not had legal recognition and protection by license. In fact, many chemists have resisted attempts to impose licensure, preferring the opportunity for free practice of their profession without government interference. Consequently, the licensed professions have, in some states, encroached upon the freedom of chemists. In one state, for many years, the law required that all chemicals be manufactured under the supervision of licensed pharmacists. In many states, attempts have been made to require that all clinical chemistry be practiced under the supervision of physicians, however unqualified in chemistry these might be.

Most chemists believe they should enjoy the status in society which their training and their contributions to civilization merit. They attribute lack of recognition primarily to their captive status, which affords them no direct contact with the public in a professional capacity, and, at the same

time, has made general licensing of chemists unnecessary for the public protection.

However, the difference in public attitude toward the classical professions and the newer scientific professions can not arise simply from the fact that the former have direct contact with the public. Increasingly large numbers of doctors and lawyers may be classified as captive professionals; perhaps as many as 40 per cent of recent M.D.'s will become salaried people. Yet medical men who spend their time at research enjoy the same special status as their colleagues in general practice, while scientific consultants who deal directly with the public do not.

This difference in status is so apparent that some have questioned whether scientists, particularly captive scientists, ought properly to be considered professionals at all, depending on definition. If we rely on the definition of the late Supreme Court Justice Brandeis, as later embodied in the Taft-Hartley Act, we find that a profession is defined by the following characteristics:

(1) The work is predominantly intellectual and varied in character as opposed to routine mental, manual, mechanical or physical work.

(2) It involves the consistent exercise of discretion and judgment in its performance.

(3) The output produced or the result accomplished cannot be standardized in relation to a given period of time.

(4) The work requires knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction and study in an institution of higher learning or a hospital.

The Taft-Hartley definition omitted one feature which Justice Brandeis included, that a profession is "pursued primarily for others and not merely oneself, and (accepts) as the measure of achievement one's contribution to society rather than individual financial reward." By this definition large numbers of chemists qualify as professionals. Why then is it that they have never been fully accepted as such by the public, that they do not enjoy the prestige accorded members of the older classical professions?

The answer is that people are obliged to entrust their most precious possessions to practitioners of these other professions. As far back as recorded history, members of these professions, or their predecessors, the medicine man, witch doctor, pagan priest, have demanded, and received, the blind faith and trust of their clients. At some time practically everyone entrusts his life to a doctor; his liberty or fortune to a lawyer; his soul to a clergyman. He is expected to follow the instructions of these professionals w i t h o u t questioning, with complete faith in their infallibility. In return, the classic professional is expected to have special qualities of integrity, a code of ethical behavior, which qualify him for this

trust. These qualities command the special respect of the community and afford members of these professions their special status.

The state and their own professional societies have collaborated to maintain adequate standards within these classical professions,and to enforce conformity with these standards. The community imposes unusually severe punishment on those members of the classical professions who violate their trust—the unethical physician or lawyer, the immoral clergyman—much more severe than on the unethical businessman.

If, then, blind trust in the professional by the public is the key to the special status of the professional man in society, can the captive professional chemist, in whom there is no direct personal conveyance of trust by the public, hope to attain such status?

I think he will, as historical necessity forces us to increase the numbers of captive professional chemists and as society becomes more directly dependent on his ingenuity, skill, and judgment for its very existence.

Consider how the material needs of man have been supplied—food, clothing, shelter, fuel, weapons, transportation, medicines. As civilization progresses, their source passes through three separate stages. In the first, or natural, stage, the materials of nature are used directly. In the next, the improvement stage, these natural materials are modified, mainly through physical changes, to adapt them to particular uses. The third is the synthetic stage, wherein relatively deep-seated chemical modification is effected or new chemical types are synthesized, specifically designed for some need.

At any one time, all three stages may coexist in the world, or in a country, and the several needs of mankind are usually at different developmental stages within the same country at the same time. The weapons of organized warfare within civilized countries are third-stage weapons, although aborigines elsewhere use first stage weapons (rocks or sticks), or second stage (bows and arrows, spears, knives). But even the most civilized countries are almost wholly dependent on first and second stage food supplies; synthetic foodstuffs are still experimental. Yet as explosive population growths make agricultural products inadequate and as non-renewable natural resources become exhausted, the historic movement toward the third stage will be accelerated and mankind will be forced to depend more on synthetic products. By 1980 our chemical industry, gigantic as it is today, will quadruple in size.

The continued existence of mankind, or civilization, depends upon the maintenance of general world peace. To the extent that major wars are caused by economic factors—desire for land, natural resources, raw materials, or trade routes — world wide material abundance based on

synthetic products could well eliminate such causes of war.

As we progress toward what Roger Adams has called "Man's Synthetic Future", and are more dependent for existence on the creativity of scientists and engineers, the status of these groups may be expected to approach that now enjoyed by the classical professions. So crucial may become the role of scientists in government and industry that society may demand of them the standards of trustworthiness that it now requires of physicians, lawyers, and the clergy. With this recognition of the high ethical and moral standards of scientists, they will at last attain the standing in society which their contributions merit.

The attainment of a stable, abundant society, then, despite a rapidly rising world population, depends upon the creativity of our scientists. Creativity is an individual function. It may be sparked by external contacts, it may be accelerated by group devices, but in last analysis an idea must be generated by an individual. If a captive scientist is to be continuously creative, his individuality must be accentuated. He should be given an opportunity for initiative, be made aware of his responsibility, provided with rewards for individual productivity. To the extent that he is permitted or forced to submerge his own personality, to lose his individuality as member of a group, to become a faceless, voiceless part of a mass, to that degree will his creativity be stifled. Roger Williams in "Biochemical Individuality," and William Whyte in "The Organization Man" effectively show this need for recognition of the individual.

Precisely herein lies the critical situation which we face. The surest way to future want, plague, and destruction, is to frustrate the individualism and creativity of captive scientists. Nor can we prevent this by a policy of drift and inaction; for there are influences which, consciously or not, tend to bring about such stultification. In many cases, employer practices tend to cause such results. Though no employer wants to decrease the productivity of his captive scientists, yet, for administrative simplicity, some employers do exactly that. Captive scientists are so relatively new that such employers have not yet realized the need for handling them differently from production workers.

When I speak of unenlightened employers, I use second- or third-hand information. I have led a sheltered professional life under an enlightened management. Our chemists have been encouraged to think independently, to express themselves freely, to participate in community and professional activities, sometimes at considerable company expense. They have been taught to acknowledge mistakes. This freedom from fear of being found wrong has emboldened our chemists to venture into research which the more insecure might have avoided;

and, where first results have been unfavorable, to withdraw promptly, without waste of more time or money in search of a crumb to justify the venture or to save face. In my professional society activities I am free to act as an individual, in accordance with my own judgment and the dictates of my own conscience. The outstanding success of U.O.P. as a research organization and the many distinctions won by its staff attest to the soundness of its philosophy.

There must be many such managements and there will be many more as increasing numbers of technically trained men assume positions of top responsibility. Yet, judging from cases which came to my attention while I was chairman of the American Chemical Society Committee on Professional Relations and Status, there are employers whose attitude can most charitably be described as backward. There was the employer who fired a chemist while he was in a hospital from an accident in which his leg was broken on the job, through no fault of his own. There was a large company which fired a woman chemist when she asked for a leave of absence upon becoming pregnant. Such employers and those who misrepresent job opportunities in order to lure professional employees, and those whose company policies make mass lay-offs of professional employees inevitable, all unwittingly play into the hands of those who believe that professional unions hold the answer to the problem of captive scientists.

To the extent that the employer denies or suppresses the professional rights and privileges of scientific and engineering employees; that he downgrades them to the status of non-professional workers; that he fails to encourage individualism, to foster professional consciousness, to stimulate a sense of responsibility and to provide recognition and reward for individual contributions, so to that degree he is fostering and encouraging professional unionism. Unionism represents a surrender of individualism. It is an acknowledgement of failure to establish satisfactory individual lines of communication between the captive scientist and his employer, and a resignation to the alternate acceptance of average mass standards attained through collective bargaining.

During the past decade, a sizeable number of captive scientists and engineers have turned to professional unions as a solution of their problems. In some cases unions have brought about temporary improvements in economic status or correction of abuses, but was the long-range cost to the members worth the results? We may judge how well unionism satisfies the needs of captive professionals by the fact that recently two large groups, which had experienced professional unionism, voted to eliminate further union representation. At the Minneapolis plant of Minneapolis-Honeywell, over 1400 scientists and engineers, after ten years with collective

bargaining, voted nearly two-to-one against any representation, when offered a choice of either of two unions or no union.

Unionization is therefore not the answer. It is the fork of the crossroad which leads to non-professionalism. The other fork requires a vigorous program of education of both captive scientists and their employers to the rights and responsibilities of each. There is an extensive literature on this subject in THE CHEMIST, *Chemical & Engineering News,* and other professional publications. In this educational and collective process, our professional societies can play a key role. The AIC and the ACS include within their membership professional chemists of all kinds—bench chemists, supervisory chemists, management, owners, consultants, college professors — united by the common bonds of their interest in chemistry and the profession of chemist. With these common interests, it is reasonable to expect that a determined, prolonged program can build that mutual respect and understanding which appear to be essential for a productive future. If differences cannot be settled over a friendly cocktail at a professional society meeting, can any satisfactory long-range solution be expected around a union conference table?

The struggle of the captive professional scientist for adequate recognition is not his alone, promoted for selfish or vain purposes. His striving for professional recognition is one with the struggle for survival of individual creativity and of our whole civilization. It is a problem equally of educators, employers, scientists, and the man in the street. It is a struggle in which our society cannot afford to fail. If we recognize the problem, if we face it squarely, if each does his part with courage and foresight, then we may look forward with confidence to a future world untroubled by scarcity or material want.

Dr. Herman S. Bloch: Person and Scientist

Dr. Herman E. Ries, Jr., F.A.I.C.

Research Department, Standard Oil Company (Ind.), Whiting, Indiana

(Presented when Dr. Bloch received the Honor Scroll of the Chicago AIC Chapter, Chicago, Illinois, October 10, 1957.)

HERMAN BLOCH is one of our most versatile and productive scientists. It is twenty years since he and I finished undergraduate and graduate work together at the University of Chicago. But today, I see the same intellectual honesty, sense of fairness, and consideration for others that was apparent in his early days at the University. I also

see the same quick, investigative, retentive mind and the same delightful sense of humor.

Herman was born in Chicago, June 15, 1912, the youngest of three children. He liked school and was very popular. At Senn High School in Chicago, he was valedictorian of his class with the highest scholastic average in Senn's history. He was president of the poetry club and class poet. His philosophy was reflected in his words, taken from the class poem:

> "For he had to fight disease and rid humanity of its plagues,
> "And he had to explore the mysteries of the universe and the atom,
> "And he had to make energy out of waste and make leisure for people yet to come,
> "And he had to amass great fortunes and unconsciously work for the ultimate community of man—
> "He had to fulfill the edict of destiny that each circle of civilization shall be greater than the last."

Herman represented Senn in the University of Chicago scholarship examinations. He decided it would be good fun to compete in Latin—and he won first place and a full scholarship. As a freshman at the University, he had the highest IQ in the class of about 700, and one of the highest in the nation. Scholarships and special fellowships continued throughout the seven years at Chicago. For this help Herman feels a deep sense of gratitude both to the University and to those who support it. He also is indebted to his brother, Bernard, who with others of the family, helped make possible this higher education. His scholastic record was one of the best ever made at the University of Chicago. He was elected to Phi Beta Kappa in his junior year, and to Sigma Xi shortly thereafter. He was an outstanding president of the Kent Chemical society.

Herman was greatly influenced by the intellectual stimulation of the Hutchins era. He was profoundly affected by the outstanding men who lectured to the undergraduates under this system: J. Harlan Bretz, geology; H. H. Newman, biology; Anton J. Carlson, physiology; Arthur H. Compton, physics;; Julius Steiglitz and Hermann I. Schlesinger, chemistry. He credits the University for teaching him to think systematically and logically.

Herman set an extremely high standard and fast pace for all of us in chemistry at the University. A rare quality for a young man was his ability to express himself simply and concisely. But he was not only quick-thinking but quick-acting. We were laboratory partners for an experiment that called for the electrolytic generation of hydrogen. The apparatus was a bit antiquated. John D. Rockefeller's gifts were falling off and the flow of government money into nuclear work had not yet begun. Inadvertent reversing of the current, or perhaps simple leakage of the chambers, produced an explosive mixture

of hydrogen and oxygen in the apparatus. We were making adjustments when a spark set off the explosion. Alkali was showered over my clothes which began to disintegrate at an embarrassingly rapid rate. The entire laboratory was splattered. But Herman, with super-human speed, had stepped out of the line of fire and was untouched.

More important talents were shown in an experience during graduate work with Prof. Steiglitz. Herman was taken to Billings Hospital with all the symptoms of a serious but obscure ailment. The medical staff conferred for many days, but no diagnosis or therapy was forthcoming for this apparently rare malady. Fortunately, however, Herman was asked one day to outline his symptoms before a large group of doctors. According to them, Herman's discussion was the most organized and beautiful presentation of a case history they had ever heard, and from a chemist, the patient! More importantly, Herman's knowledge of the chemicals with which he had been working led directly to the diagnosis and cure of an unusual type of chemical poisoning.

Herman received the Ph.D. degree in 1936. His thesis work was on molecular rearrangements. A wide choice of attractive positions was offered to him, but Herman decided on Universal Oil Products, a leading research organization in the petroleum field.

The story is told that when Dr. Egloff and other officials of U.O.P. asked Herman to engage in petroleum research, he went to the dictionary to check "petroleum"; even organic chemistry was quite ivory-tower then. Herman was disturbed to learn that petroleum was a terribly impure, complex mixture. However, he was quickly assured that all the molecules in petroleum are pure molecules. I think he is still trying to separate them.

Herman began his research with energy, enthusiasm, and good judgment. As with Steiglitz, every unexplained phenomenon became a personal challenge. Within a year he produced one of the classical research studies in catalytic cracking. He had insisted, in true University of Chicago fashion, that a complete series of metal oxides of high purity be studied systematically under carefully controlled conditions. Dr. Egloff reported on this work at a World Congress in Paris in 1937.

In almost everything he does, Herman is a perfectionist, but with a practical sense of the time factor. He is even said to be a perfectionist in bridge, especially as applied to his wife's game! He married Judy in 1940. She is most helpful and understanding; and also a graduate of the University of Chicago.

Herman rose rapidly at Universal Oil Products; group leader in 1939; a division coordinator in 1945, and deputy director of the Refining Re-

search Department in 1955. He has been granted more than 100 patents and has a long list of publications. The patents cover many fields—such refining processes as separation, cracking, isomerization, alkylation, and reforming; synthetic drying oils, synthetic resins, synthetic detergents, catalysts, and others. Recently, he has had a large responsibility in the development of the UDEX Aromatics Extraction Process. This summer he gave a scholarly lecture on "Chemistry of Catalyst Degradation" at the Gordon Research Conference on Petroleum. But Herman will always insist that his most valuable contributions are produced as a member of the U.O.P. research team, and will lean backwards to make his role seem a minor one.

The three Bloch children are carrying on the high standards set by their parents. Aaron, fifteen, has won the Illinois State Latin contest and the Illinois State Science Contest. Janet, twelve, successfully organized a nursery group this summer. Merry, nine, also has an exceptionally fine mind, according to her teachers. The most impressive and important aspect of the family is the unusual affection and respect each has for the others.

One of the most spontaneous reactions to my requests for information about Herman was that he does more good work on thankless jobs than anyone in the Chicago area. He seeks no personal recognition. It is, therefore, even more appropriate that he be recognized by the Honor Scroll Award. I have never known a finer combination of man and scientist than Herman S. Bloch.

The Professional and Community Activities of Dr. Bloch

Dr. Hoylande D. Young

Argonne National Laboratories, P. O. Box 299, Lemont, Illinois

(Presented when Dr. Bloch received the Honor Scroll of the Chicago AIC Chapter, October 10, 1957, in Chicago, Ill.)

THERE is given to each of us twenty-four hours in a day. How we use that twenty-four hours is all-important. All must sleep and eat. Most must work. Some time is required for attention to self. The time that remains may be apportioned among a great variety of activities. That which is available for relaxation, reverence, creative activity, learning, enjoyment of home, family, friends, nature, and service to others is all too short for a person who is alive to the world about him, who wants to be a part of it. Selection and planning there must be, if he is to find more

of satisfaction than frustration. The choice which he makes, and the devotion which he brings to the activities of his choice mark the man.

How Herman Bloch has found time to do all that he has done, has managed to do it so efficiently and so well, is his secret. He has recognized with Emerson that "a great soul will be strong to live, as well as strong to think," that "he who has put forth his total strength in fit actions has the richest return of wisdom."

That Herman has chosen wisely and has rendered great service to profession and community is evidenced by his record.

He joined the American Chemical Society in 1936, a member of the Chicago Section. In 1939, he accepted appointment to the Finance Committee. He continued to be active, helping with more committees. He was chairman of the successful all-day Technical Conference in 1947. He was chairman of the Endowment Committee in 1952-53, and in this capacity undertook to study the need for a Student Loan Fund, because he wanted idle funds to be used to help someone worthy of help. He was chairman of the Chicago Section in 1954-55. He will say that he balanced the budget (a rare accomplishment these days), that he consumated arrangements for the Employees' Pension Plan, that he was active in defeating a bill in the Illinois Legislature restricting the use of hypodermic syringes to the medical profession. I say that he was exceedingly well-informed on every facet of the Section's activities, and "the day was always his because he worked with serenity and great aims."

Herman continues to be active in Section affairs. He is presently secretary of the Trustees of the National Chemical Exposition, and recently proposed some excellent ideas relating to Exposition activities. He is also a Pension Fund Trustee. As councilor for the Chicago Section, 1946 to date, Herman has been active in the National organization where he has made himself known, respected and admired. . . .

He has served on Council Committee on Professional Relations and Status from 1951 to 1956, with two terms as chairman. His deep interest in the professional status of the chemist is one of the principal reasons why this committee has accomplished so much during his chairmanship. . . . One of these accomplishments is the 1955 Professional and Economic Survey, the first since 1944, a re-evaluation of the economic status of 65,000 U. S. ACS members.

Alden Emery says:

> "Acknowledgements prefaced by the Committee omit a credit which is richly deserved—that to the Committee on Professional Relations and Status, especially its chairman. The Committee has followed this undertaking closely and advised at every step. Herman Bloch, its chairman, organized the corps of volunteer reviewers. He has analyzed the comments and criticisms of committee members and of all other persons.

> The evaluation and often coordination of conflicting opinions and the ultimate preparation of proposals for modification and change in questionnaire, tables and discussion was a heavy burden. No expression of appreciation can be too great for this generous and devoted service."

And relative to Herman Bloch's contribution to the committee as a whole Alden Emery says:

> "Since Bylaw provisions do not permit your reappointment we have been deprived of your valuable experience and service to this committee. We shall miss you. The standing committees of the Council have rendered outstanding service to the ACS and therefore to the profession. No individual has contributed more than you through such service."

It is apparent that Herman's work with this committee has been in keeping with the belief that one should surround each human with barriers of natural respect "so that each man shall feel the world is his, and man shall treat with man as a sovereign state with a sovereign state." He is presently serving on the Council's Policy Committee. He is also on the Program Committee of the Petroleum Division of the ACS.

He has served on many of the committees of the Chicago Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. In 1948 he became vice chairman, and in 1949-1950 was chairman of the Chapter. He served on the Committee on Economic Status from 1952 to 1956, which reflects his intense interest in these matters. He was chairman of the Program Committee for the successful 26th National AIC Meeting and treasurer of the 32nd National Meeting. He is a member of several national committees, including the Employer-Employee Relations Committee. As a member of this committee, working with Dr. Lloyd Hall, he drafted a model contract for chemists, since recommended by the AIC Council. He is now studying the reasons for job-hopping.

As alternate or delegate representing the ACS on the Board of Governors, from 1945 to 1952, he was active in the Chicago Technical Society Council. Here he organized the first CTSC Lecture Series at the Museum of Science and Industry, a continuing activity. He helped to organize and served as the first general chairman of the Chicago Area Career Conference, securing active participation of the Catholic high schools with the city and county schools. Herman was treasurer for the Chicago Association of Scientists and Engineers from 1946 to 1950.

This partial list of his professional activities will show something of the magnitude of his contribution.

The Blochs lived in the Chatham-Avalon Community from 1951-1955, where he was active with the community council. He was a council-sponsored speaker to neighborhood groups on race relations. With his wife, he organized the Mosquito Abatement Program and progams for fly and rat control for this area of

50,000 population. He was assistant Scout Master with the Boy Scouts of America, and chairman of the Board of Review, Troop 556.

Now the Blochs live in Skokie. Herman is a director for the Niles Township Community Chest. He is a member of the Niles Township High School Caucus which recommends candidates for the Board of Education; chairman of the Niles Township Independent Caucus to name candidates for the Township Office, and a member of the Village Caucus which recommends candidates for Village offices. . . . He is a member of the Niles Township Community Council Executive Committee; vice president and program chairman of the North Central Home Owners Association, and with his wife he is active in the Sharp Corner PTA. He is a member of the Temple Judea of Niles Township, serving on its Adult Education Committee.

The pattern of serious endeavor, acceptance of civic responsibility and desire for accomplishment, evident over twenty years ago, has persisted. Herman Bloch's way of life demonstrates Emerson's observation:

> "The private life of one man shall be a more illustrious monarchy, more formidable to its enemy, more sweet and serene in its influence to its friend than any kingdom in history."

Left to Right: Dr. Henry B. Hass, Dr. Bloch and Dr. H. M. Coleman.

Presentation to Dr. Bloch

DR. HERMAN S. BLOCH, F.A.I.C., deputy director of refining research for Universal Oil Products Co., Des Plaines, Illinois, received the Honor Scroll of the Chicago AIC Chapter, at a dinner held October 10, 1957, at the Furniture Club, Chicago, Ill.

Guest speakers were Dr. Herman E. Ries, Jr., Research Department, Standard Oil Company (Indiana), Whiting, Ind., who spoke on "Dr. Bloch—Person and Scientist", and Dr. Hoylande D. Young, of Argonne National Laboratories, who discussed "The Professional and Community Activities of Dr. Bloch." Dr. H. M. Coleman of General American Transportation Corp., East Chicago, Indiana, and chairman of the Chicago Chapter, presided. The Honor Scroll was presented by Dr. Henry B. Hass, National AIC president. Dr. Bloch responded with an address on "The Captive Professional Chemist." (See preceding pages for these talks.)

The citation on the Honor Scroll to Dr. Bloch reads:

"In recognition of your intense interest and influence in promoting truly professional attitudes and constructive actions in the profession of chemistry; your enthusiasm and positive direction in guiding and in promoting the professional growth of young chemists; your very active participation and recognized leadership in both civic and technical organizations, and your outstanding scientific accomplishments in industry."

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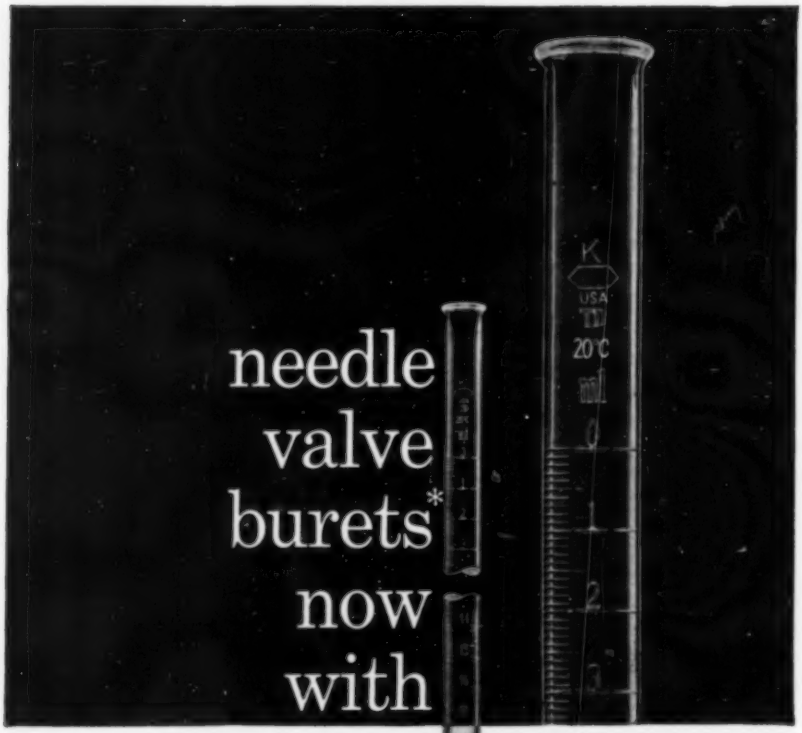

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Understanding the Creative Process

Dr. Maurice J. Kelley, F.A.I.C.

Director, Industrial Specialties Laboratories, Nopco Chemical Co., Harrison, N. J.

(This is the first part of a series on "Understanding the Creative Process")

Part I, The Importance of Creativity

WHAT do we mean by creativity or creative thinking? Creativity is the ability to construct new combinations of thought or things; the ability to produce something that is new, different and, as M.I.T.'s Professor John E. Arnold insists, better. A person is creative when he does something for the first time by himself, without specific knowledge or counsel[1]. Creative action requires creative thinking.

It has been said that talent is doing easily what others find difficult; that genius is doing easily what seems impossible and that creativity is the achievement of great things without the awareness of it[2]. Another wit has said, "Nothing is impossible—but some people are!"

The subject of creativity is enjoying just now a burst of popularity much like a current fad. Everybody it writing about it, talking about it, and many universities and business firms are doing something about it. Actually, Plato and Aristotle around 350 B.C. wrote about the creative process, and the latter's ideas dominated the whole field of psychology for 2000 years. We are familiar with many of the famous creative people who dot the centuries from ancient times even to our own.

The history of civilization is essentially the record of man's and whole people's creative ability. How often do we note the repetition of "the rise and fall of" nations and peoples, who were originally "have-nots" eager to grow. Their eagerness sparked their creativity and they did grow and rise, and they entered upon a period of success and dominance among nations. When self-satisfaction and luxury sapped their creativity, they fell victim to a newer, more eager, more creative people.

We are living in and enjoying an age of unprecedented material advantages, leisure time, and well-being, brought about by the creativeness of the famous and myriads of lesser contributors to human betterment. Due to the creativity of all who have gone before us, one freeman in a country such as ours can produce everything, and more, than 120 slaves in olden times could do. Even in the days of the pioneers in our own country, each day was a creative problem for sur-

1. Von Fange, E. K. "Understanding the Cretive Process." Gen. Elec. Rev. **58**, 64-7 (July) 1955.
2. Murphy, Dennis. "Creative Thinking in Business." Amer. Gas J. **183**, 19-22 (July) 1956.

vival, and the penalty for non-creativity was death. Contrast this with the large amount of poorly spent leisure today. Creativity is even often looked down on. Yet two-thirds of the world's people are always hungry, and 90 per cent of the world's finer material things are enjoyed by less than 25 per cent of the people. Can anyone doubt the importance of creativity, and the challenges that are its task?

Therefore, let us not become too complacent about things. Many parts of the world do not enjoy the advantages we have; there is a true peace to be won, and anyway complacency will dull our creativeness which is so necessary to continue our country's life and civilization's forward progress.

By now, it is becoming apparent that creativity is not just something for the scientist and engineer. Creative thinking is equally desirable in all sciences, the arts, business and industry, everyday life; in the home, in teaching, in government, and in the councils of nations. To use Osborn's phrase[3], creative thinking is as applicable to people-problems as to thing-problems. Jarman[4] says good thinking is the most important process in civilization.

When did the present furor over creativity start? Psychologists have been studying and writing about the process of creativity for decades. Actually, New York University first gave a course in creativity in 1926. General Electric Company started its Creative Engineering Program in 1936. Alex F. Osborn, the famous educator and advertising agency executive of the firm of Batten, Barton, Durstine & Osborn, began the use of his "Brainstorming" technique in 1939. In 1953, Osborn published his book *Applied Imagination*[5] which has become the "bible" of present day proponents of creative thinking. This book is stated to be now in use by 300 colleges and universities. At least 23 universities now give courses in creativity, and at least 57 business firms either give courses in or use deliberate creative techniques.

As neatly stated by Charles S. Whiting, of the Harvard Business School graduate research group under Professor Doriot, the theory of creative thinking is based on the following premises:[6]

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3. Nelles, Maurice. "Deliberate Creativeness in Science and Engineering." Chem. Eng. News **31**, 1820-3, 1953.
4. Jarman, B. H. "Can Executives Be Taught to Think?" Adv. Mgmt. **19**, 5-8 (Jan.) 1954.
5. Osborn, Alex F. "Applied Imagination—Principles and Procedures of Creative Thinking." Book: Chas. Scribner's Sons, New York (1953).
6. Whiting, Charles S. "Operational Techniques of Creative Thinking." Adv. Mgmt. **20**, 24-30 (Oct.) 1955.

1. Everyone has some inherent or latent creative ability.
2. Certain mental and social factors prevent most people from fully utilizing their creative ability.
3. Understanding the creative process and deliberate practices can diminish mental and social blocks and greatly improve one's actual creativity.

Maurice Nelles, director of research for Borg-Warner Corp., has said[3] that the historians of the future may well record that the outstanding contribution of this century was the development of the art of deliberate creativeness.

(Part II, entitled "The Thinking Processes and Creativity" will appear in the December CHEMIST.)

Communications

The Case for Inverted Education

To the Editor:

This is a preliminary report on an extensive program of armchair research. Its great expense is completely unmeasurable. What scarcer commodity is there these days than leisure thinking time by a scientist? No one questions the current demand for it. Therefore, with demand high and the commodity scarce, what could be more valuable than the cogitations of a scientist?

The current literature is filled with statements about the high rate at which the Russian schools are turning out engineers and scientists. It is inferred that there is something wrong with our own system. But these writers offer no comprehensive suggestions for improving our way of educating our technical people. There is at least one notable and outstanding exception to this generality. (I don't know who that is, but if you are the exception, please take note.)

Here is a suggestion for an educational system that should at least provoke a good argument. The present system can be loosely described as a pyramid. We ask the student to lay a broad foundation of knowledge in the basic sciences. Then we allow him to narrow his field of attention and begin to specialize. Finally, at the pinnacle of the pyramid, we have the Ph.D. candidate working on a specific, narrow field of research.

This is a wonderful system. It has been responsible for the education of most of the scientists who are now making major contributions to our country's fund of knowledge. It is a system that we developed through the combined efforts of many brilliant educators. (The first rule in salesmanship is to agree with the fellow you are trying to sell.) Some-

times a good thing can be made better by turning it completely end for end.

If you turn this educational pyramid completely upside down, a rather interesting concept develops. Maybe it can be used somehow to swell the ranks of our technical people. Why not brainstorm the notion a bit?

The educational committees of our scientific societies bemoan the difficulty of interesting bright young people in the study of science. Many youngsters are frightened by the "boring, uninteresting" basic subjects. College student advisers will attest to their problems in keeping students interested long enough to get to the study of a specialty.

Young minds have difficulty building interest in a subject for which they see no practical application. We say they lack the maturity to understand the need for a solid basic foundation. Would not it be horrible if they were right and we were wrong? Maybe both ideas are right and there is room for the inverted pyramid system of education, too. (Never tell the customer that he is all wet.)

Why not give young people in college an opportunity to get a little taste of all of the arts and sciences. Give them a comprehensive survey of the humanities, the physical, and the biological sciences. Even if some phase proved to be "boring", it would not stay so for long. Such a survey program designed to take no more than two college years would have to be a fast-moving proposition. Immediately after the survey period, let the student select a specialty as narrow and as specific as he wishes. Better yet, let him work on a project constituting a new contribution to knowledge in his selected field. This would be about the same as putting a college junior to work on a Ph.D. thesis.

Now we have the student right square behind our eight-ball. To work himself out, he will find that it is necessary for him to study courses in the basic sciences. His study in these fields, however, will have been given a purpose. As his study proceeds, he will be able to see his bearing on his own selected field.

The student who is forced, for some reason, to drop out of school before completing his program is thereby equipped with experience in the sort of work that he will encounter in industry. Industrial jobs are usually very specific. In this inverted education program, we have already taught our student how to apply himself to specific problems, even though he may not be fully equipped in the basic sciences.

There is nothing really new under the sun. Industrial on-the-job training has been taking this slant for many years. Many industries found that it was perfectly practical to train people for specific jobs without regard to their background. The only

novelty here is in applying the inverted pyramid educational program to scientists. (Every salesman needs a gimmick to sell the product.)

There are admittedly many gaps in this suggested program. After all, it took several generations to develop the present educational system. This preliminary report is being given on our armchair research in the hope of stimulating others to devoting some of their armchair time to this notion.

—John E. Thompson, F.A.I.C.
Chicago, Ill.

References

To the Editor:

In the September, 1957, issue of *The Scientific Monthly* (p. 126), there is a most interesting discourse by Van Cleve Morris (based on a paper presented in Oct. 1956), which bears on the subjects of science education and supply of scientists. It knocks down several notions and reports now current. However, the author's criticism of Joel H. Hildebrand's views of John Dewey is certainly rendered invalid by Dr. Hildebrand's later article in THE CHEMIST (May, 1957).

Hans Thirring wrote a very thought-provoking article in the October, 1956, issue of *American Scientist* (p .445), which may be of interest to those who want our schools to impart wisdom as well as knowledge.

—Bernard S. Friedman, F.A.I.C.
Chicago, Ill.

Inventors Are Grateful

To the Editor:

Dr. Makara's communication in the October issue of THE CHEMIST (pp. 393-4) must not remain unchallenged. The provision in the U. S. patent law that the inventors have to apply for patents is one of the finest official recognitions that invention still originates in individuals. Let us inventors be grateful for this recognition! How many directors of research really are so unscrupulous as to claim inventorship that is not theirs? Makara states they are the rule; does he not know that the law requires a sworn statement of inventorship? Violation of this law invalidates the patent!

Certainly the companies employing the inventor are entitled to ownership under their provisions. Since they pay for the work, they should reap its benefits. The present law should be welcome to all companies, because by honoring the inventor as a person it stimulates his efforts.

—Dr. Eduard Farber, F.A.I.C.
Washington, D. C.

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John L. Wilson, *Twin City Chapter*

May Council Meeting

(Condensed)

THE 314th meeting of the National AIC Council was held May 22, 1957, at the Sheraton-Mayflower Hotel, Akron, Ohio, with President Nair presiding. Present were: Messrs. J. Bjorksten, W. B. Blumenthal, J. R. Bowman, C. L. Brown, R. P. Dinsmore, A. W. Fisher, Jr., L. A. Hall, H. B. Hass, F. A. Hessel, D. B. Keyes, R. L. Moore, J. H. Nair, K. W. Newman, E. Ott, G. L. Royer, G. H. Taft, J. L. Wilson, and M. B. Williams. Present also were L. T. Eby, L. H. Flett, K. M. Herstein, M. J. Kelley, V. F. Kimball, and Annual Meeting Committee members: D. F. Behney, O. D. Cole, J. D. D'Ianni, E. M. Glymph, H. M. Olson, D. F. Siddall, and E. V. Sloan.

The Secretary reported the membership total as 2913.

President Nair announced, with deep regret, the following deaths:

Charles John Dhonau, M.A.I.C., on March 27, 1957.

Washington Hull, F. A. I. C., on April 24, 1957.

Raymond A. Hybarger, F.A.I.C., on Jan. 9, 1957.

Morris Schlissel, F.A.I.C., on Feb. 29, 1956.

Richard C. Smith, F. A. I. C., a Charter Member, on March 1, 1957.

Committee chairmen for the 1958 Annual Meeting were approved.

The following persons were given Emeritus Membership: Clarence W. Burkhart, Dr. Icie Macy Hoobler, Dr. John H. Jensen, and Harry S. Pickering.

The Advisory Board for THE CHEMIST was confirmed.

Dr. Royer presented the report of the Committee on Manpower and referred to an article entitled, "Let's Stop this Shocking Waste of Scientific Manpower," in the May 1957, *Reader's Digest*.

Dr. Eby, chairman of the Membership Committee, praised the cooperation he had received from the members of his committee.

Dr. Brown, chairman of the Committee on Professional Education, stated that his committee was considering college curricula.

Dr. Kelley distributed copies of a proposed "Manual of National Council Operations" and asked the councilors for their comments. (This Manual appears in the September, 1957, CHEMIST.)

Mr. Williams asked for suggestions to increase the membership of the Alabama Chapter.

Dr. Bjorksten reported for the Chicago Chapter.

Mr. Wilson reported for the new Twin City Chapter.

Mr. Taft stated that the New England Chapter would elect new officers in the Fall.

Mr. Blumenthal reported for the Niagara Chapter.

Dr. Newman discussed plans for the 1958 Annual Meeting, for which the Western Chapter will act as host.

Mr. Nair stated that he had spoken recently before the Washington and Baltimore Chapters and would speak at the Niagara Chapter meeting in June.

Dr. Hall suggested that a means of interesting students in science is to hold meetings of students and get newspaper and industrial support, as has been done in the Chicago area.

An amendment to the by-laws, adding "Article XV—Charters to Local Chapters," was approved. (See June, 1957, CHEMIST, page 192.)

A vote of thanks was given to Mr. Nair for his fine work as president of the AIC during the fiscal year.

The following new members were elected:

FELLOWS

Brooks, Dr. Walter
Research Chemist, Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

Cook, Marvin K.
Consulting Chemist, Norman Applezweig Associates, 131 Christopher St., New York 14.

Dann, Dr. Frank W.
Chief Chemist, Desitin Chemical Co., 812 Branch Ave., Providence 4, Rhode Island.

Emmett, Dr. Paul H.
Johns Hopkins University, Baltimore, Maryland.

Gidley, Dr. Philip T.
President, Gidley Laboratories, Inc., Fairhaven, Mass.

Jewel, Dr. Paul W.
Chief Chemist, Max Factor & Co., 1655 No. McCadden Place, Los Angeles 18, Calif.

Kienzle, Fred H.
Industrial Chemical Sales, Braun Corp., 1363 Bonnie Beach Pl., Los Angeles, Calif.

Knauff, Dr. Raymond E.
Director, Bioanalytical Lab., G. O. Searle & Co., Searle Pkway, Skokie, Illinois

Kruse, Dr. Paul F., Jr.
Assistant Research Director, Biomedical Div., The Samuel Roberts Nobel Foundation, Inc., Box 870, Ardmore, Oklahoma.

Lambert, Frank E., Jr.
Associate Professor of Chemistry, Junior College of Augusta, Georgia.

Langeland, Dr. William E.
Sr. Development Representative, Pennsalt Chemicals Corp., 3 Penn Center Plaza, Philadelphia 2, Pa.

Moran, Juliette M.
Supervisor, Technical Service Commercial Development Dept., General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.

Moshy, Dr. Raymond J.
Project Leader, Central Laboratories, General Foods Corp., Hoboken, N. J.

Nelson, Dr. K. LeRoi
Associate Professor, Brigham Young University, Provo, Utah.

Neustadt, B. Nicholas
President, Permastay Products Corp., 2010 Main St., Niagara Falls, N. Y.

Page, Dr. John O.
Chemistry Dept., A. & M. College of Texas, College Station, Texas.

Park, Bartholow
Professor, Michigan College of Mining & Technology, Houghton, Mich.

Parker, John A., Dr.
Manager, Chemistry Research Unit, Armstrong Cork Co., Lancaster, Pa.

Paulsen, Grover C., Jr.
Technical Director, Marine & Power Plant Service Div., The Magnus Chemical Co.; *Secretary, Member,* Board of Directors, The American K. A. T. Corp., 608 South Ave., Garwood, N. J.

Payne, V. F.
Chemist (Materials Research & Development), U. S. Army Signal Engineering Labs., Ft. Monmouth, N. J.

Persell, Ralph M.
Assistant to Chief (*Chemical Engineer*), Southern Utilization Research Branch, U.S.D.A., 1100 Robert E. Lee Blvd., New Orleans, La.

Robinson, Dr. Herbert E.
Director of Laboratories, Swift & Company, Union Stock Yards, Chicago 9, Illinois.

Schaefer, Dr. Arthur E.
Manager, Control Department, General Aniline & Film Corp., Rensselaer, N. Y.

Schaeffer, Dr. George W.
Director, Department of Chemistry, St. Louis University, 1402 S. Grand Blvd., St. Louis 4, Missouri.

Schoeffel, Dr. Eugene W.
Director of Research & Development, Salvo Chemical Corp., Rothschild, Wisconsin.

Schubert, Walter J., Dr.
Associate Professor, College of Pharmacy, Fordham University, New York 58, N. Y.

Schulz, Dr. Johann C. F.
Assistant Professor, Wagner College, Staten Island 1, N. Y.

Sellers, W. Wallace, Jr.
Head, Electrochemical & Wet-Process Sections, Research Lab., International Nickel Co., 30 Oak St., Bayonne, N. J.

Seyer, Dr. William F.
Professor of Engineering, University of California at Los Angeles, Los Angeles 24, California.

Smith, Herbert E.
Chemist, Northern Utilization Research & Development Div., ARS., U.S.D.A., 1815 N. University, Peoria, Ill.

Smith, Dr. W. Mayo
Assistant Director of Research & Development, Escambia Chemical Corp., 70 Memorial Drive, Cambridge 42, Mass.

Snell, Dr. J. F.
Head, Radioisotopes Research Lab., Pfizer Therapeutic Institute, 199 Maywood Ave., Maywood, N. J.

Solanen, Dr. Nicholas W.
Research Associate, Merck Sharp & Dohme, West Point, Pa.

Sparrow, Donald B.
Arthur D. Little, Inc., Acorn Park, West Cambridge, Mass.

Stallings, James W.
Chief Chemist, Amerotron Corporation, Barnwell, South Carolina.

Starkman, Jesse H.
Assistant Technical Director, Van Dyk & Co., Inc., 11 William St., Belleville 9, N. J.

Stern, Dr. Adolph J.
Dean of the College & Chairman, Chemistry Department, Wagner College, Grymes Hill, Staten Island, N. Y.

Sylvander, Nels E.
General Manager, Research & Development Div., Pittsburgh Consolidation Coal Co., Library, Pa.

Urbain, Dr. Walter M.
Associate Director of Research, Swift & Company, U. S. Yards, Chicago 9, Ill.

Ward, Dr. Geoffrey R.
Director of Research, Los Angeles Soap Co., 617 E. First St., Los Angeles 56, Calif.

REINSTATED AS FELLOW

Buckman, A. F. Jr.
Research & Development, S. C. Johnson & Son, Inc., Racine, Wisconsin.

RAISED FROM MEMBER TO FELLOW

Welles, Ernest
Senior Chemist in Charge of Research, Dexter Chemical Corp., 845 Edgewater Road, Bronx 59, N. Y.

MEMBERS

Cosimini, Joseph P.
Analytical Chemist, The Toni Co., 332 Rosabel St., St. Paul 1, Minnesota.

Olson, Stanley W.
Research Chemist, The Toni Co., 332 Rosabel St., St. Paul 1, Minn.

Pafford, Phil T.
Market Research Analyst, General Chemical Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

Ryan Thomas J.
Twin Coach Company Aircraft Division, Cayuga Road, Box 2507, Buffalo 25, N. Y.

Verbiscar, Anthony J., Dr.
Director of Research, Regis Chemical Co., 1219 N. Wells, Chicago 10, Illinois.

Shabica, Dr. Anthony C., Jr.
Director, Development Research, Ciba Pharmaceutical Products, Inc., Morns Ave., Summit, N. J.

Shine, William M.
Assistant to Vice President & Technical Director, Celanese Corporation of America, 180 Madison Ave., New York, N. Y.

Shorkey, Albert F.
General Superintendent, The Dow Chemical Co., Freeport, Texas.

Shrader, Dr. Marvin O.
Supervisor, General Organic Chemical Research, Pittsburgh Coke & Chemical Co., Neville Island, Pittsburgh 25, Pa.

Shull, Dr. Gilbert M.
Research Biochemist, Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, N. Y.

Skeeters, Dr. Maxwell J.
Research Group Leader, Chlorinated Products Div., Diamond Alkali Co., P. O. Box 348, Painesville, Ohio.

Small, Dr. Gilbert, Jr.
Research Chemist & Research Project Leader, The Cryovac Co., Div. of W. R. Grace, 62 Whittemore Ave., Cambridge 40, Mass.

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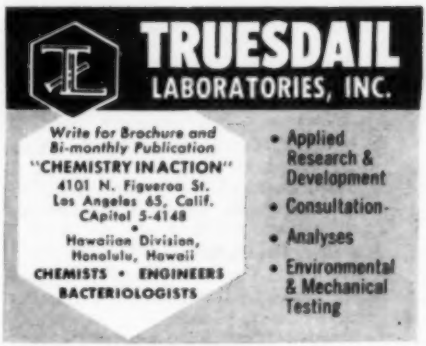
About AIC Members

Dr. Alexander Silverman, Hon. AIC, in July attended scientific sessions in Paris, France. He presided at the Commission on Inorganic Chemical Nomenclature of the International Union of Pure and Applied Chemistry; he spoke on "Some Eminent Chemists of the Twentieth Century" at the Centennial Celebration of the Chemical Society of France, and he spoke before the High Temperature Division of the Inorganic Chemistry Section of the International Congress of Pure and Applied Chemistry on "The Production of High Melting Glass Fibers."

Robert M. Wagner, F.A.I.C., is now project leader, Nuclear Engineering Section, Physical Sciences Division, Stanford Research Institute, Menlo Park, California.



Dr. Irving Skeist, F.A.I.C., announces that his laboratory is now combined with that of Dr. E. W. K. Schwarz, under the name of Skeist & Schwarz Laboratories, Inc., 89 Lincoln Park, Newark 2, N. J., providing consulting services in polymer-textile chemistry.

Dr. Roger H. Lueck, F.A.I.C., vice president, Research & Technical Department, American Can Company, was the keynote speaker at the annual meeting of the Federation of Paint & Varnish Production Clubs, in Philadelphia, Pa., October 31st.

Hillary Robinette, Jr., F.A.I.C. president of Robinette Research Labs., Inc., Ardmore, Pa., addressed the 30th International Congress of the Society of Industrial Chemistry, in Athens, Greece, September 19th.

Samuel B. McFarlane, F.A.I.C., is manager of the Fiber Research Department of the Summit, N. J., Research Laboratories of Celanese Corporation of America.

DR. ALLEN B. SIMON, F.A.I.C.
Consultant in Chemistry
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Dr. J. Frederick Walker, F.A.I.C., of E. I. du Pont de Nemours & Co., Inc., Niagara Falls, N. Y., received the Schoellkopf Award of the Western New York Section of the American Chemical Society in May. His acceptance address was on the chemistry of formaldehyde. He concluded his talk with the statement, "The faults in this modern world are not in our science but in ourselves. The challenge of the future must be met with more knowledge, not less of it."

Dr. E. M. Kipp, F.A.I.C., has joined Foote Mineral Company, as director of research, at the Research & Development Department at Berwyn, Pa.

Mortimer W. Brenner, F.A.I.C., is now vice president of Schwartz Laboratories, Inc., Mount Vernon, N. Y.

S. Rus Schay, F.A.I.C., has been appointed aromatics chemist for the Southern Chemical Division of The Glidden Company of Cleveland, Ohio.

Dr. Ashley Robey, F.A.I.C., Roanoke College, Salem, Va., received one of the 1957 College Chemistry Teacher Awards made by the Manufacturing Chemists' Association, Inc., at the 85th Annual Meeting of the Association at White Sulphur Springs, W. Va.

Technical Executives: Who served as delegates from the Society of Cosmetic Chemists to International meetings in Paris, Geneva, and London, during August, included M. G. deNavarre, F.A.I.C., S. F. Coneybear, F.A.I.C., Harry Bennett, F.A.I.C., Dr. Murray Berdick, F.A.I.C., and Samuel Cohen, M.A.I.C.

Dr. Albert C. Zettlemoyer, F.A.I.C., professor of chemistry, Lehigh University, and director of research, National Printing Ink Research Institute, was the Mattiello Lecturer at the annual meeting of the Federation of Paint & Varnish Production Clubs, in Philadelphia, Pa., October 31st.

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Dr. R. W. Townley, F.A.I.C., has established a research and consulting laboratory in chemistry, microbiology and related branches, specializing in modern chemical measurements, under the name of Townley Research & Consulting, at Long Hill Road, R. D. 1, Gillette, N. J.

R. E. Horsey, F.A.I.C., vice president in charge of sales, Givaudan-Delawanna, Inc., announces a new aromatic chemical, "Lilial". Samples and data may be obtained from the company at 330 W. 42nd St., New York 36, N. Y.

Dr. Garrett W. Thiessen, F.A.I.C., of Monmouth College, Monmouth, Ill., was awarded one of the 1957 College Chemistry Teacher Awards made by the Manufacturing Chemists' Association, Inc., at its 85th Annual Meeting at White Sulphur Springs, W. Va.

Dr. Max Tishler, F.A.I.C., vice president of the Research Laboratories Division, Merck & Co., Inc., announces the appointment of Dr. David F. Green as executive director of animal science activities.

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Bernard R. Krashin, M.A.I.C., president of Colton Chemical Co., Cleveland 14, Ohio, announces the opening of a warehouse and technical service laboratory at 3409 Medford St., Los Angeles 63, Calif.

Burt Wetherbee, F.A.I.C., is now located at 2368 E. Foothill Blvd., Pasadena, California.

Shepherd Stigman, M.A.I.C., is now with the Lotte Chemical Corporation, 109 Fifth Ave., Paterson, N. J.

Dr. Roger W. Truesdail, F.A.I.C., announces that Truesdail Laboratories, Inc., has affiliated with Abbot A. Hanks, Inc., Engineers, Assayers, Chemists, and Metallurgists, San Francisco, Calif., to provide air pollution investigation facilities in the Bay Area.

Dr. Frederick W. Stavely, F.A.I.C., director of chemical and physical research laboratories, Firestone Tire & Rubber Company, Akron, Ohio, was recently named president-elect of the Industrial Research Institute of New York 17, N. Y.

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Dr. Hal G. Johnson, F.A.I.C., is with the Vick Chemical Company, 122 E. 42nd Street, New York 17,

William C. Ingersoll, M.A.I.C., has joined the Thiokol Chemical Corp., Redstone Division, Redstone Arsenal, Huntsville, Alabama.

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Scientists: Engineers, Administrators, and Technicians. For career opportunities with Air Research and Development Command, request list from Civilian Personnel Office, Hqs. ARDC, P.O. Box 1395, Baltimore 3, Maryland.

Project 200: Opportunities for chemists, chemical engineers, bacteriologists, and other scientists, in the U. S. Army, Regular Officer Corps. Write for booklet, "Project 200", to Maj. Gen. Herbert M. Jones, Dept. of Army, Washington 25, D. C.

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Ph.D. Chemist: Age 34, ten years of varied industrial experience, desires responsible position in research and/or development. Midwestern location. Box 112, THE CHEMIST.

Technical Legal: Graduate chemist, several years laboratory and administrative experience. Wishes beginning legal position with opportunity to study law in New York City area. Box 114, THE CHEMIST.

For Your Library

A Life of Sir William Ramsay

By Morris W. Travers F.R.S. Edward Arnold (Publishers) Ltd. London. 1956. 308 *pp.*, 8"x10". $12.50.

Written by a devoted colleague of Sir William Ramsay, this definite biography contains a wealth of hitherto unpublished material which adds immeasurably to the interest of the book. Valuable documents, including Ramsay's laboratory note-books, were lent to the author by Lady Ramsay; to these were added an immense collection of papers, including personal correspondence, which Ramsay's daughter confided to the author after Lady Ramsay's death in 1937. Besides these, Mr. Travers has also drawn upon a voluminous correspondence with Ramsay's friends.

The result is not only a well-documented analysis of the scientist's work, of the development of his ideas, but also a picture of William Ramsay, born in Glasgow, grandson of a chemist, educated at the University there, which he entered at the age of 14. Abstracts from letters and note-books take us through his student years, both in Glasgow and Tubingen, and then show his development as educator and inventor. The personality of the man must be read between the lines, because Mr. Travers presents all facts in exactly "the same tone of voice." But the fascinating individual hidden behind this prosaic presentation is worth the reading required to find him. And for the chemist, Ramsay's hand-written notes and the pictures of his apparatus are enough to make this book a valuable possession.

—Dr. Frederick A. Hessel, F.A.I.C.

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Chemical Books Abroad

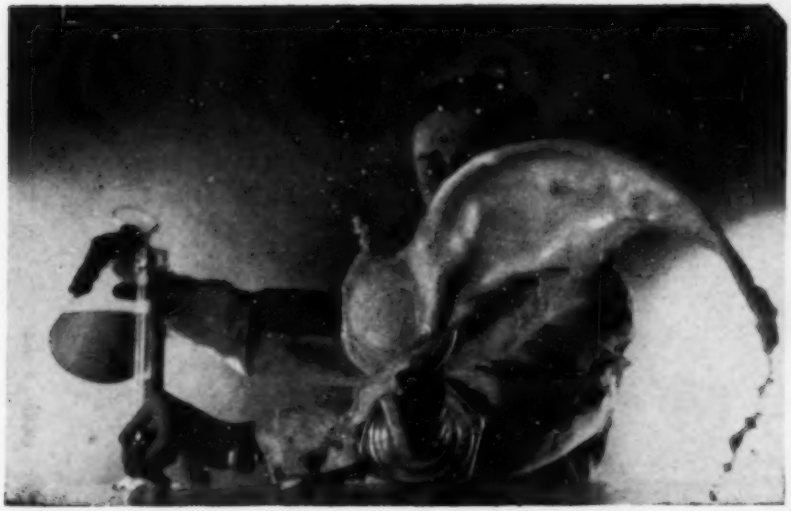
By Dr. Rudolph Seiden, F.A.I.C.

Verlag Gustav Fischer, Jena: *Mikroskopische Untersuchung pflanzlicher Nahrungs—und Genussmittel,* by G. Gassner; 2nd ed., 384 pp. (812 ill.); DM 26.—The general idea and set-up of this book and its exquisite pen drawings—all enlarged 200 x — make one wish that an English translation (with minor modifications) could become available soon. This is a most helpful reference work for the microscopic investigation of plant materials used in the food and feed industries.

Chapman & Hall Ltd., London WC 2: *Solvents,* by Th.H. Durrans; 7th ed., 259 pp.; 30 s.—For over 25 years this monograph on solvents has been a "bible" to those in need of dependable figures and facts on action, power, balance, viscosity, evaporation, inflammability, and toxicity of solvents and a concise catalog of the physical and chemical properties and other useful data concerning the modern solvents and plasticizers used in the chemical and related industries.

Walter de Gruyter & Co., Berlin W 35: *Lehrbuch der physiologischen Chemie,* by F. Leuthardt; 13th ed., 922 pp. (72 ill.); DM 42—This standard work of physiologic chemistry, founded by Prof. S. Edlbach and revised by Prof. Leuthardt, is a tribute to the authors' thoroughness. Methodically are discussed the chemistry of the building materials of foodstuffs and body, physical-chemical principles, metabolisms, composition and function of organs and tissues, and nutrition. The bibliography fills 33 pages.

Urania-Verlag, Leipzig C 1: *Streifguege durch die Chemie,* by S. Spauszus; 1956, 360 pp. (245 ill.); DM 10.80—A great variety of questions concerning chemical problems are answered and explained in an often humorous and always easily understandable manner. • *Aquarienchemie,* by O. Wagner; 1956, 148 pp. (200 ill.); DM 5.80—Hardness and pH of water and dozens of chemical elements and compounds as well as chemical-biological processes and procedures greatly influence the life of plants and fish. This unique book was written for the amateur to help him understand chemistry in so far as it concerns his aquarium and apply it successfully to his hobby.



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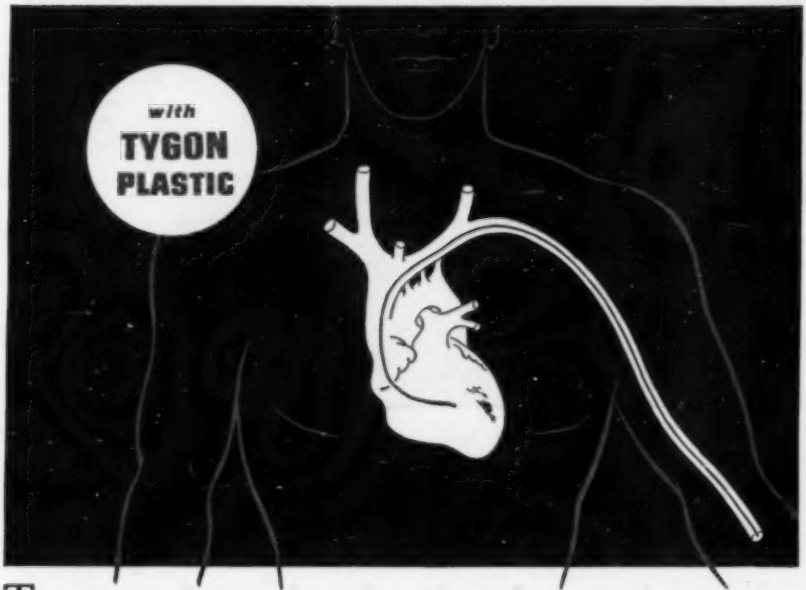

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